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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,763	09/29/2003	Nobuhiro Kuwamura	16869G-087800US	4461

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EXAMINER

BARTON, JONATHAN A

ART UNIT PAPER NUMBER

2186

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/674,763	Applicant(s) KUWAMURA, NOBUHIRO	
	Examiner Jonathan Barton	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/20/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: METHOD FOR PREVENTING DATA LOSS DUE TO REPEATED WRITES TO A GIVEN TRACK ON A MAGNETIC DISK DEVICE.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 7, 9-10, 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Codilian et al. (US 6,462,896) in view of Gerhart (US 2002/0138692).

- a. As for claim 1 Codilian discloses
 - i. Maintaining a first set of one or more first-parity-track[s] and a second set of second-parity-track[s] (Col. 3 Lines 5-11); and
 - ii. In response to a command to write data to a given first-parity-numbered track (Col. 3 Lines 20-27),
- b. Codilian fails to disclose, but Gerhart teaches

- iii. counters regarding write operations of first parity-numbered tracks and second parity-numbered tracks (Par. 46 Lines 6-14);
 - iv. Determining based at least in part on values of counters in the first and second sets, whether a criterion is met (Par. 46 Lines 9-17,
 - v. Only if the criterion is met, reading data from a second-parity numbered track (Par. 46 Lines 28-33), and
 - vi. Updating a counter in the first set in a manner that in at least some instances depends on whether the criterion is met (Par. 46 Lines 20-24).
- c. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the write counters of Gerhart with the interleaved disk tracks of Codilian because both methods are used for operating a hard disk and preventing data error, and adding the counters provides the benefit of logging the track usage in a simple and straight-forward manner.
- d. As for claim 2 Codilian et al. disclose
- vii. The first and second pluralities of track are located in a disk area and constitute a fraction of a total number of tracks on the surface of the magnetic disk (Col. 3 Lines 5-11, Col. 1 Lines 43-49);
- e. While Gerhard teaches
- viii. The method further comprises maintaining respective first and second additional sets of counters used to prevent data loss in an additional plurality of first-parity-numbered tracks interleaved with an

additional plurality of second-parity-numbered tracks located in a different disk area (Par. 46 Lines 6-14).

- f. As for claim 3 Gerhard teaches
 - ix. The first and second sets of counters each contain a single counter (Par. 46 Lines 6-9);
 - x. The criterion is that the counter in the second set is non-zero, and the counter in the first set has reached a threshold (Par. 46 Lines 9-24).
- g. As for claim 4 Gerhard teaches
 - xi. The criterion is that at least one second-parity numbered track have been written (Par. 46 Lines 20-24), and
 - xii. The number of writes to the first parity-numbered-tracks has reached a threshold (Par. 46 Lines 9-24).
- h. As for claim 7 Codilian et al. disclose
 - xiii. Storing track information regarding writes to first-parity-numbered tracks and second-parity-numbered tracks (Col. 3 Lines 5-11);
- i. While Gerhard teaches
 - xiv. In response to a command to write data to a given first-parity-numbered track, determining whether a criterion specifying risk to data on a second-parity-numbered track is met (Par. 46 Lines 9-24); and
 - xv. If the criterion is met reading data from one or more second-parity-numbered tracks, and storing the data, so read (Par. 46 Lines 28-33).
- j. As for claim 9 Codilian et al. disclose

- xvi. A magnetic disk for having a surface (Col. 3 Lines 5-11);
- xvii. A magnetic head for writing or reading the data on or from said surface of said magnetic disk (Col. 3 Lines 5-11); and
- xviii. A write and read circuit, connected to said magnetic head, for causing said head to write or read data (Col. 3 Lines 5-11);
- xix. The data being written on concentric tracks on said surface of said magnetic disk, said tracks including a first plurality of first-parity-numbered tracks and a second plurality of second-parity-numbered tracks (Col. 3 Lines 5-11);
- k. While Gerhard teaches
 - xx. A first set of one or more first-parity-track counters (Par. 46 Lines 9-24);
 - xxi. A second set of one or more second-parity-track counters (Par. 46 Lines 9-24);
 - xxii. Control circuitry that accesses and updates said first and second sets of counters, said control circuitry being configured to respond to a command to write data to a given first-parity-numbered track (Par. 46 Lines 9-24) by
 - xxiii. Determining, based at least in part on values of counters in said first and second sets, whether a criterion is met, only if the criterion is met, reading data from a second-parity-numbered track (Par. 46 Lines 9-24), and

xxiv. Updating a counter in said first set in a manner that in at least some instances depends on whether the criterion is met (Par. 46 Lines 9-24).

l. As for claim 10 Colidian et al. disclose

xxv. the first and second pluralities of tracks are located in a disk area and constitute a fraction of a total number of tracks on said surface of said magnetic disk (Col. 3 Lines 5-11);

xxvi. the magnetic disk further comprises an additional plurality of first-parity-numbered tracks and an additional plurality of second-parity-numbered tracks interleaved with the first plurality of first-parity-numbered tracks (Col. 3 Lines 5-11),

xxvii. said additional pluralities of tracks being located in a different disk area (Col. 3 Lines 5-11);

m. while Gerhard teaches

xxviii. the magnetic disk device further comprises first and second additional sets of counters (Par. 46 Lines 9-24);

xxix. and said control circuitry further accesses and updates said additional first and second sets of counters (Par. 46 Lines 9-24),

xxx. and is configured to respond to a command to write data to a given first-parity-numbered track in the different disk area by determining, based at least in part on values of counters in said first and second additional sets, whether a criterion is met (Par. 46 Lines 9-24),

- xxxi. only if the criterion is met, reading data from a second-parity-numbered track in said different disk area, and updating a counter in said first additional set in a manner that in at least some instances depends on whether the criterion is met (Par. 46 Lines 9-24).
- n. As for claim 11 Colidian et al. disclose
 - xxxii. a magnetic disk for recording data (Col. 3 Lines 5-11);
 - xxxiii. a magnetic head for writing or reading the data on or from the magnetic disk (Col. 3 Lines 5-11);
 - xxxiv. and a write and read circuit, connected to the magnetic head, for writing or reading the data (Col. 3 Lines 5-11);
 - xxxv. wherein the data is written or read to or from a plurality of tracks in the form of concentric circles disposed on the magnetic disk (Col. 3 Lines 11-28); and
 - xxxvi. data on tracks adjacent to the given track is read out once and, then, the read-out data is rewritten to the adjacent tracks (Col. 3 Lines 11-28).
- o. While Gerhard teaches
 - xxxvii. wherein the number of writes of data on a given track is acquired and it is detected that the number of writes reaches a predetermined number (Par. 46 Lines 9-24), and
 - xxxviii. based on the detection (Par. 46 Lines 9-24),
- p. As for claims 12 and 13 Colidian et al. disclose

- xxxix. A magnetic disk device comprising: a magnetic disk for recording data (Col. 3 Lines 5-11);
- xl. a magnetic head for writing or reading the data on or from the magnetic disk (Col. 3 Lines 5-11);
- xli. and a write and read circuit, connected to the magnetic head, for writing or reading the data; wherein the data is written or read to or from a plurality of tracks in the form of concentric circles disposed on the magnetic disk (Col. 3 Lines 5-11);
- q. while Gerhard teaches
 - xlii. and wherein all tracks on the magnetic disk are divided into a plurality of areas, the number of writes of data on even/odd-numbered physical tracks in the divided areas is acquired and it is detected that the number of writes reaches a predetermined number (Par. 46 Lines 9-24), and
 - xliii. based on the detection, data on odd/even-numbered physical tracks in the divided areas is read out once and, then, the read-out data is rewritten on the odd/even-numbered tracks (Par. 46 Lines 9-24).
- r. As for claims 14 and 15 Gerhard teaches
 - xliv. When the read-out data is rewritten on the odd/even-numbered tracks, the number of writes on the even/odd-numbered physical tracks is cleared (Par. 46 Lines 20-25).
- s. As for claim 16 Colidian et al. disclose

xliv. When data is written on the tracks, the data is written on alternate physical tracks and every other track is skipped and, after the data is written on half of all the tracks, the data is written on the skipped tracks (Col. 3 Lines 11-28).

t. As for claims 17-22 Gerhard teaches

xlvi. When it is detected that the number of writes reaches the predetermined number, the data to be rewritten is read and, then, if the number of retry for the data reaches a predetermined the data is rewritten (Par. 46 Lines 9-24).

3. Claims 5, 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Codilian et al. (US 6,462,896) in view of Gerhart (US 2002/0138692), and further in view of Shirakawa (JP 405334015A – examiner's note: a certified translation of this document is currently being generated, a copy of the information temporarily relied upon by the examiner will be attached with this office action).

u. As for claims 5 and 8 Shirakawa teaches

xlvi. If data is read from a second-parity-numbered track, determining a number of retries necessary for reading the data (Constitution);

xlvi. If the number of retries reaches a threshold (Constitution)

v. While Gerhart teaches

xlix. Writing the data read from one or more second-parity-numbered tracks to one or more second-parity-numbered tracks (Par. 46 Lines 9-24).

w. The combination of Codilian and Gerhart is detailed in paragraph c of this office action. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the retry count of Shirikawa with the disk data protection method of Codilian and Gerhart because Shirikawa's system is also for dealing with errors on a magnetic disk, and the retry count provides additional useful information to the system to help deal with errors.

x. As for claim 6 Gerhart teaches

l. If data is written to second-parity-numbered tracks, updating a counter in the first set includes setting the counter to a value signifying a single write to a first-parity-numbered track (Par. 46 Lines 9-24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Barton whose telephone number is 571-272-8157. The examiner can normally be reached on Monday - Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2186

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jonathan Barton
Examiner
Art Unit 2186



JB



MATTHEW D. ANDERSON
PRIMARY EXAMINER